2003-2004 ANNUAL REPORT
(July 1, 2003 - June 30, 2004)

MPWMD MITIGATION PROGRAM
WATER ALLOCATION PROGRAM ENVIRONMENTAL IMPACT REPORT

MONTEREY PENINSULA WATER MANAGEMENT DISTRICT
Prepared April 2005

I. INTRODUCTION AND EXECUTIVE SUMMARY

BACKGROUND:

In April 1990, the Water Allocation Program Final Environmental Impact Report (EIR) was prepared for the Monterey Peninsula Water Management District (MPWMD) by Mintier and Associates. The Final EIR analyzed the effects of five levels of annual California American Water (Cal-Am) production, ranging from 16,744 acre-feet per year (AFY) to 20,500 AFY. On November 5, 1990, the MPWMD Board certified the Final EIR, adopted findings, and passed a resolution that set Option V as the new water allocation limit. Option V resulted in an annual limit of 16,744 AFY for Cal-Am production, and 3,137 AFY for non-Cal-Am production, resulting in a total allocation of 19,881 AFY for the water resource system.

Even though Option V was the least damaging alternative of the five options analyzed in the Water Allocation EIR, production at this level still resulted in significant, adverse environmental impacts that must be mitigated. Thus, the findings adopted by the Board included a "Five-Year Mitigation Program for Option V" and several general mitigation measures.

In June 1993, Ordinance No. 70 was passed, which amended the annual Cal-Am production limit from 16,744 AF to 17,619 AF, and the non Cal-Am limit from 3,137 AF to 3,054 AF; the total production limit was increased from 19,881 AF to 20,673 AF per year due to new supply from the Paralta Well in Seaside. In April 1996, Ordinance No. 83 slightly changed the Cal-Am and non-Cal-Am annual limits to 17,621 AF and 3,046 AF, respectively, resulting in a total limit of 20,667 AFY. In February 1997, Ordinance No. 87 was adopted to provide a special water allocation for the planned expansion of the Community Hospital of the Monterey Peninsula, resulting in a new Cal-Am production limit of 17,641 AFY; the non-Cal-Am limit of 3,046 AFY was not changed. These actions did not affect the implementation of mitigation measures adopted by the Board in 1990.

The Five-Year Mitigation Program formally began in July 1991 with the new fiscal year (FY) and was slated to run until June 30, 1996. Following public hearings in May 1996 and District Board review of draft reports through September 1996, the Five-Year Evaluation Report for the 1991-1996 comprehensive program as well as an Implementation Plan for FY 1997 through FY 2001 were finalized in October 1996. In its July 1995 Order WR 95-10, the State Water Resources Control Board (SWRCB) directed Cal-Am to carry out any aspect of the Five-Year Mitigation Program that the District does not continue after June 1996. To date, as part of the annual budget approval process, the District Board has voted to continue the program. The mitigation program presently accounts for a significant portion of the District budget in terms of revenue (derived primarily from the MPWMD fee on the Cal-Am bill) and expenditures.

The California Environmental Quality Act (CEQA) (Pub. Res. Code 21081.6) requires that the MPWMD adopt a reporting or monitoring program to insure compliance with mitigation measures when implementing the Water Allocation Program. Findings Nos. 387 through 404 adopted by the Board on November 5, 1990 describe mitigation measures associated with the Water Allocation Program; many entail preparation of annual monitoring reports. This 2003-2004 Annual Report for the MPWMD Mitigation Program responds to these requirements.

Previous annual reports (1991, 1992 and 1993) covered the calendar year January 1 through December 31. Because this time period conflicted with the District's budget cycle (July 1 - June 30), it was determined that an 18-month report was needed to bridge the transition from a calendar year to a fiscal year in 1994-95. Thus, the fourth MPWMD Annual Report covered the January 1994-June 1995 period. The fifth (and subsequent) annual reports covered the fiscal year period of July 1 through June 30 of the following year. This report is the thirteenth in the series, and the eighth report using the fiscal year planning period. It is notable that hydrologic data and well reporting data are tabulated using the water year, defined as October 1 through September 30, in order to be consistent with the accounting period used by the SWRCB. This report was delayed until April 2005 in order to incorporate the most recent production data, provided to the District Board at its March 21, 2005 meeting.

This 2003-2004 Annual Report will first address general mitigation measures relating to water supply and demand (Sections II through VIII), followed by mitigations relating to specific environmental resources (Sections IX through XII). Section XIII provides a summary of costs for the biological mitigation programs as well as related hydrologic monitoring and administrative costs. Section XIV presents selected references by topic.

Table I-1 summarizes the mitigation measures described in this report. In subsequent chapters, for each topic, the mitigation measure adopted as part of the Final EIR is briefly described, followed by a summary of activities relating to the topic in FY 03-04 (July 1, 2003 through June 30, 2004 unless as noted otherwise). Monitoring results, where applicable, are also presented. Tables and figures that support the text are found at the end of each section in the order they are mentioned in the text. Finally, a summary of observed trends, conclusions and/or recommendations is provided, where pertinent.

ACCOMPLISHMENTS:

Many activities are carried out as part of the MPWMD Mitigation Program to address the environmental effects that community water use has upon the Carmel River and Seaside Groundwater Basins. Highlights of the accomplishments in FY 03-04 for each major category are shown in **Table I-2**.

OBSERVED TRENDS, CONCLUSIONS AND/OR RECOMMENDATIONS:

The following paragraphs describe observed trends (primarily qualitative), conclusions and/or recommendations for the mitigation program. General conclusions are followed by a summary of selected categories.

General Overview

In general, the Carmel River environment is in better condition than it was 10 years ago. This improvement is evidenced by biological/hydrologic indicators such as consistent steelhead adult spawner counts of roughly 400-850 fish in recent years as compared to 0-5 fish per year when the Mitigation Program began in 1991; improved densities of juvenile steelhead in quantities that reflect a healthy seeded stream; consistently increased bird diversity in MPWMD restoration project areas compared to control areas; fewer miles of dry river in summer and fall than in the past; and higher water tables in the

Carmel Valley alluvial aquifer at the end of the water year.

The comprehensive MPWMD Mitigation Program is an important factor responsible for this improvement. Direct actions such as fish rescues and rearing, and riparian habitat restoration literally enable species to survive and reproduce. Indirect action such as conservation programs, ordinances/regulations and cooperative development of Cal-Am operation strategies result in less environmental impact from human water needs than would occur otherwise. The District's comprehensive monitoring program provides a solid scientific data baseline, and enables better understanding of the relationships between weather, hydrology, human activities and the environment. Better understanding of the water resources system enables informed decision-making that achieves the District's mission of benefiting the community and the environment.

It is acknowledged that there are other important factors responsible for this improved situation. For example, since 1991, the Carmel River has received normal or better runoff in 10 out of 13 years. Actions by federal resource agencies under the Endangered Species Act (ESA) or the SWRCB under its Order WR 95-10 have provided strong incentive for Cal-Am and other local water producers to examine and amend water production practices to the degree feasible, and for the community to reduce water use. Except for one year in 1997, the community has complied with the production limits imposed on Cal-Am by the SWRCB since Order 95-10 became effective in July 1995.

Despite these improvements, challenges still remain due to human influence on the river. The steelhead and red-legged frog remain listed as Threatened species under the ESA. Several miles of the river still dry up each year, harming habitat for fish and frogs. The presence of the two existing dams, flood plain development and water diversions to meet community needs continue to alter the natural dynamics of the river. Stream bank restoration projects may be significantly damaged in large winter storm events, and some people continue to illegally dump refuse into the river or alter their property without the proper permits. Thus, the Mitigation Program (or a comprehensive effort similar to it) will be needed as long as significant quantities of water are diverted from the Carmel River and people live in close proximity to it.

Water Resources

Streamflow and precipitation data continue to provide a scientific basis for management of the water resources within the District. These data continue to be useful in Carmel River Basin planning studies, reservoir management operations, water supply forecast and budgeting, and defining the baseline hydrologic conditions of the Carmel River Basin. The District's streamflow monitoring program continues to produce high quality data in a cost-effective manner. For example, the current annual cost of maintaining a single streamflow gaging station charged by the United States Geological Survey (USGS) is $17,600 per year. If the District's streamflow monitoring program were maintained by the USGS, the annual cost would be $317,000 (based on 18 gage sites). The District is able to maintain its streamflow monitoring network with approximately 75 percent of a full-time District staff position (Associate Hydrologist), and an annual equipment-operating budget of about $2,000.

Rainfall and Streamflow. Rainfall at San Clemente Dam in water year (WY) 2004 was 18.16 inches, or 85% of the average value of 21.37 inches. Streamflow measured at San Clemente Dam totaled 36,269 AF, which is classified as a "below-normal" water year.

Surface and Groundwater Storage. There is very limited storage of surface water by dams on the Carmel River. Los Padres Dam, completed in 1948, currently holds an estimated 1,478 AF of usable storage. Usable storage in San Clemente Dam, completed in 1921, has been essentially eliminated by order of the Department of Water Resources (DWR) due to seismic safety concerns. As an interim safety

measure through WY 2005, DWR has required Cal-Am to lower the dam water level from 525 feet to 514 feet elevation, which is too low for water supply use. Cal-Am has proposed a dam seismic strengthening program that is currently undergoing state and federal environmental review.

Groundwater levels, and consequently groundwater storage conditions, in the Carmel Valley alluvial aquifer have maintained a relatively normal pattern in recent years, in contrast to the dramatic storage declines that were observed during the prolonged 1987-91 drought period. The relatively stable storage in the Carmel Valley alluvial aquifer in recent years is attributable to a combination of more favorable hydrologic conditions and the adoption of improved water management practices that have tended to preserve high storage conditions in the aquifer.

In contrast, storage conditions in the coastal portion of the Seaside Basin have not been stable in recent years, in particular with respect to the deeper Santa Margarita aquifer, from which over 80 percent of the Cal-Am production in the Seaside Basin is derived. This downward trend in water levels reflects the changed production operations in the Seaside Basin stemming from SWRCB Order 95-10. The increased annual reliance on production from Cal-Am's major production wells in Seaside, along with significant increases in non-Cal-Am use, have dramatically lowered water levels in this aquifer, and seasonal recoveries have not been sufficient to reverse this trend.

One of the means to mitigate this observed trend is a program that the District has been actively pursuing since 1996 -- the Seaside Basin groundwater injection program (also known as aquifer storage and recovery, or ASR). Continued testing of the District's full-scale test injection well was carried out during FY 03-04 to further confirm the feasibility of this important means to help replenish the basin. Fortunately, groundwater quality conditions in both the Carmel Valley alluvial aquifer and Seaside Basin have remained acceptable in terms of potential indicators of contamination from shallow sources such as septic systems, and there have been no identifiable trends indicative of seawater intrusion in the coastal areas of these two aquifer systems.

The District is preparing a Seaside Basin Groundwater Management Plan following Board direction in 2003, in compliance with protocols set by the State of California (AB 3030 as amended by SB 1938). Plan elements include several technical assessments and development of best management schemes to address identified problems. The District meets with an Advisory Committee comprised of major water well pumpers, agency officials, and stakeholders. Complicating this task is litigation filed by Cal-Am on August 14, 2003. The suit asserts Cal-Am's water rights and requests a Court adjudication of the Seaside Basin. The District is formally recognized as an "interested party" and participates in all litigation proceedings.

Steelhead Resource

Monitoring conducted by the District shows that the Carmel River steelhead population continues to recover from remnant levels that prevailed as a result of the last drought and past water supply practices. Since 1992, the spawning population has recovered from a handful of fish to levels approaching 900 adults per year as counted at San Clemente Dam (most recently, 388 fish in Winter 2004). In addition, monitoring of the juvenile population at several sites along the mainstem Carmel River below Los Padres Dam shows that the population is recovering from low densities during the 1989-91 period (ranging below 0.50 fish per foot [fpf] of stream) to levels frequently ranging above 1.00 fpf during FY 03-04, values that are typical of well-stocked steelhead streams. In FY 03-04, average population density was above the long-term average for the Carmel River. District staff believes the recovery of steelhead in the Carmel River is directly related to the following factors:

- Improvements in streamflow patterns, due to favorable natural fluctuations, exemplified by relatively high base flow conditions since 1995;

- The District's and the SWRCB rules to actively manage the rate and distribution of groundwater extractions and direct surface diversions within the basin;

- Changes to Cal-Am's operations at San Clemente and Los Padres Dams, providing increased streamflow below San Clemente Dam;

- Improved conditions for fish passage at Los Padres and San Clemente Dams due to physical improvements;

- Recovery of riparian habitats, tree cover along the stream, and increases in woody debris, especially in the reach upstream of Robinson Canyon;

- Extensive rescues (and rearing) by MPWMD of juvenile steelhead over the last ten years, now totaling 213,000 fish through December 31, 2004; and by the transplantation of the younger juveniles to viable habitat upstream, and of older smolts to the lagoon or ocean, and

- Implementation of a captive broodstock program by Carmel River Steelhead Association and California Department of Fish & Game, and planting of 186,882 juvenile fish, including 73,786 fry, 84,679 fingerlings, and 28,417 smolts during the period from 1991 to 1994.

Though overall populations are improved since the inception of the Mitigation Program in 1991, District staff has noticed a decline in the adult run since 2001, even though the juvenile population density has increased. For example, the adult count was 388 fish in Winter 2004, which was below average, but the Fall 2003 juvenile fish density was the second highest on record. Possible reasons for the lower-than expected number of adults counted at San Clemente Dam include (a) better spawning conditions in the lower Carmel River (i.e., fish spawn before they reach the counter at the dam); (b) the impacts of fishing (i.e., catch-and-release in the winter season can adversely affect spawning activity and nests, and take of juvenile fish in Spring reduces the number of fish that reach the ocean); (c) low numbers of juvenile fish in 1999 and 2001 affect subsequent adult populations; (d) migration barriers such as the Old Carmel River Dam; (e) poor water quality in the lagoon in 2002 caused a fish die-off, resulting in fewer returning adults; and (f) possible poorer ocean conditions.

A recent challenge that may remain for some years is the potential effects of substantive physical and operational changes to San Clemente Dam required by DWR, including possible removal of the dam. The most significant issue is the effect of released sediment from the reservoir on downstream river habitat, proper functioning of MPWMD's Sleepy Hollow Steelhead Rearing Facility, and downstream property owners (flood elevations). Major changes include: (1) lowering of the reservoir water level to address seismic safety concerns; (2) significant changes in the sediment regime in the Carmel River downstream of San Clemente as the dam fills with sediment; and (3) loss of reservoir storage, which, in the past, has helped maintain adequate river flows in the lower Carmel River.

District staff continues to provide technical expertise and scientific data to Cal-Am engineers and environmental consultants, DWR/DSOD, California Department of Fish & Game, NOAA Fisheries, U.S. Fish and Wildlife Service, and others involved in addressing the resource management issues associated with seismic retrofit of San Clemente Dam.

Riparian Corridor

The Carmel River is showing many signs of recovery after the extreme drought and flood events during the 1990s that impacted property owners, threatened species, and riparian habitat. Sand and gravel that

was washed out of streambanks and into the river bottom during floods is slowly migrating through the system and is leaving behind a more complex channel with diverse habitat and a richer riparian community. Areas with perennial flow (upstream of Schulte Bridge) or a high groundwater table, such as downstream of Highway 1, have experienced vigorous natural recruitment in the channel bottom, which has helped to stabilize streambanks and diversify aquatic habitat.

In these areas, natural recruitment has led to vegetation encroachment that, in some areas, may constrict high flows and threaten bank stability. MPWMD continues to monitor these areas closely and to develop a management strategy to balance protection of native habitat with the need to reduce erosion potential. Environmental review of proposed projects and the process of securing permits are quite complex, and require an exhaustive review of potential impacts.

In contrast to areas with perennial flow, the recovery of the streamside area between Rancho Cañada and Quail Lodge is being impacted by increased groundwater extraction. In this reach, only irrigated areas appear to be able to sustain a diversity of plant species. Plant stress in the late summer and fall is evident in non-irrigated portions of the river. In these areas, streambanks exhibit unstable characteristics during high flows, such as sudden bank collapse, because of the lack of healthy vegetation that would ordinarily provide stability.

Restoration project areas sponsored by MPWMD over the past 20 years are maturing and beginning to exhibit more features of relatively undisturbed reaches, such as plant diversity and vigor, complex floodplain topography, and a variety of in-channel features such as large wood, extensive vegetative cover, pools, and riffles. However, many areas that were repaired after the 1995 and 1998 floods are still limited in these natural features. In part, this may be due to the location and geometry of the projects (i.e., several are located in narrow sections of the river impacted by groundwater extraction). Also, many of these projects relied heavily on the use of rip-rap to stabilize banks, which can discourage plant vigor and diversity.

The most significant trends include the following:

- increased oversight of channel maintenance and restoration activities by Federal agencies,
- increased groundwater extraction downstream of Schulte Road,
- vegetation encroachment into the channel bottom,
- increased avian (bird) species diversity, and
- maturing of previous restoration projects.

Carmel River Erosion Protection and Restoration

Sand contributed by erosion in the Tularcitos Creek drainage and from the collapse of Carmel River streambanks covered the channel bottom of the Carmel River main stem for about 16 miles in 1998. This sand appears to have been washed down to the lower two to three miles of river, except in areas with pools greater than 300 feet in length. Spawning-sized gravel and cobble has moved as far downstream as the Rancho Cañada golf course (or sand has been stripped away to reveal larger material) and steelhead spawning has been observed in this area. This is additional evidence that streambanks in the main stem are relatively stable, and that tributary input of sediment has also stabilized.

However, there are a few areas where streambank erosion may occur during high flows. The following list is based primarily on observations of current vegetative bank cover and past erosion at these sites. These are (from downstream to upstream):

1. vicinity of Hacienda Carmel (River Mile [RM] 3.2 to RM 3.9);

2. south bank upstream of the Rancho San Carlos Road Bridge (RM 3.9), at the Quail Lodge golf course;
3. south bank at the upstream end of the Valley Hills Restoration Project (RM 5.5);
4. north bank at the upstream end of Garland Park (RM 11.2).

Sites 1, 2 and 3 lie in areas where groundwater extraction continues to be a key factor affecting the establishment and sustainability of streamside vegetation. Some natural recovery of the riparian corridor may be possible through irrigation; however, long-term recovery and stability is unlikely until overly steep streambanks are graded and protected against erosion. Site 4 at Garland Park has, perhaps, the most significant encroachment problem along the river. However, the habitat for steelhead and California red-legged frogs is among the highest quality along the river. MPWMD will continue to monitor these areas for degradation and/or instability.

It is likely that the following trends will continue or develop in the near future:

- Permit applications by MPWMD for river work will come under increasing scrutiny at all levels of government. More stringent avoidance and mitigation requirements will be placed on activities that could have potential negative impacts on sensitive aquatic species or their habitats.

- Activities that interrupt or curtail natural stream functions, such as lining streambanks with riprap, will be discouraged or denied permits. Activities that increase the amount of habitat or restore natural stream functions are more likely to be approved in a streamlined manner.

- Additional work to add instream features (such as large logs for steelhead refuge or backwater channel areas for frogs) will be necessary to restore and diversify aquatic habitat.

- Major restoration projects completed between 1992 and 1999 will require additional work to diversify plantings and to maintain irrigation systems during the establishment period (varies from 5 to 10 years depending on environmental conditions and the availability of staff resources). Streambank repair may be necessary after high flows as previously installed structural protection goes through an initial adjustment period.

A comprehensive long-term solution to river degradation requires a significant increase in dry- season water flows in the lower river to pre-development levels, a reversal of the incision process, and reestablishment of the river's natural meander pattern. Of these, MPWMD has made progress with increasing summer low flows and in studying the effects of an increased sediment load to the river. Reversal, or at least halting of channel incision, which contributes to bank collapse, may be possible if the supply of sediment is brought into balance with the transport capacity of the river (the system is currently "sediment starved"). With San Clemente Reservoir over 90% filled with sediment, it is likely that the supply of sediment downstream of the San Clemente Dam will increase in the very near future.

Presently, no deadline has been set by DWR for Cal-Am to implement a plan to remediate the safety deficiencies that have been identified at San Clemente Dam. However, a new combined EIR and Environmental Impact Statement (EIS) on several alternatives is expected to be completed by mid-2006. In the interim, DWR has directed Cal-Am to draw San Clemente Reservoir down and maintain it at 10 feet lower than the spillway, except between February 1 and April 15 (to allow for downstream migration of steelhead).

It is likely that sediment supply in the main stem downstream of the dam will increase in the near future,

which could help elevate or maintain the level of the river channel bottom. Over the long term, an increase in sediment supply could help reduce streambank instability. Reestablishing a natural meander pattern presents significant political, environmental, and fiscal challenges, and is not currently being considered as part of the Mitigation Program.

Vegetation Restoration and Irrigation

To the maximum extent possible, MPWMD-sponsored river restoration projects incorporate a functional floodplain that would be inundated in relatively frequent storm events (those expected every 1-2 years). For example, low benches at the Red Rock and All Saints Projects have served as natural recruitment areas, and are currently being colonized by black cottonwoods, sycamores and willows. In addition, willow and cottonwood pole plantings in these areas were installed with a backhoe, which allows them to tap into the water table. These techniques have been successful and have reduced the need for supplemental irrigation.

However, as pumping has increased in the lower Carmel Valley (pursuant to direction by the SWRCB and a Conservation Agreement between Cal-Am and NOAA Fisheries), supplemental irrigation was installed on the engineered floodplain opposite the All Saints School. Summer pumping at Cal-Am's Schulte Well impacted the District's deep pole plantings, causing premature leaf drop. Riparian moisture stress was mitigated by installing a drip irrigation system. It is anticipated in wet years this system will not have to be operated, but in average to below-average years, the drip system will have to be used.

The Conservation Agreement between Cal-Am and NOAA Fisheries has changed the lower Carmel Valley pumping regime. Depending on the total rainfall for the year, increased pumping at the Cañada Well may cause significant stress to the riparian corridor and create the need for supplemental irrigation. The severity of these impacts was monitored in 2003-2004 through the Conservation Agreement Monitoring Plan. Based on observation of stress to riparian trees in the area, the irrigation system at the Cañada well was expanded to offset impacts from groundwater extraction.

Channel Vegetation Management

Another notable trend relating to the District's vegetation management program was the widening of the channel after the floods in 1995 and 1998. With relatively normal years following these floods, the channel has narrowed as vegetation recruits on the streambanks and gravel bars. Current Federal regulations, such as the "ESA Section 4 (d)" rules promulgated by NOAA Fisheries to protect steelhead, significantly restrict vegetation management activities. Currently, there are relatively few physical channel restrictions and erosion hazards in the lower 15 miles of the river. In the absence of high winter flows capable of scouring vegetation out of the channel bottom, encroaching vegetation may significantly restrict the channel. As vegetation in the river channel recovers from the high flows of 1995 and 1998 and matures in the channel bottom, more conflicts are likely to arise between preserving habitat and reducing the potential for property damage during high flows. MPWMD will continue to balance the need to treat erosion hazards in the river yet maintain features that contribute to aquatic habitat quality.

Permits for Channel Restoration and Vegetation Management

Obtaining individual permits for conducting activities in the channel of the Carmel River has become increasingly complex since 1995 with the listing of steelhead and California red-legged frogs as Threatened species under the protection of the Federal Endangered Species Act. Staff time for obtaining authorizations from the California Department of Fish and Game (CDFG) and the U.S. Army Corps of Engineers (Corps) has risen dramatically, and the lead-time for obtaining these authorizations can stretch to years for a complex project. Much more emphasis is also being placed on incorporating habitat

enhancements for steelhead and California red-legged frogs into projects. This has increased project development time and costs.

To cope with the rising level of environmental analysis and documentation necessary to obtain permits, MPWMD sought and obtained a long term permit from the Corps and the California Regional Water Quality Control Board, and is negotiating a renewal of a long term Memorandum of Understanding with CDFG to conduct regular maintenance and restoration activities. The District will also seek long-term permits or agreements with other regulatory agencies including the Monterey County Planning and Building Inspection Department and the Monterey County Water Resources Agency.

Monitoring Program

Vegetative moisture stress fluctuates depending on the rainfall, proximate stream flow, and average daily temperatures, and tends to be much lower in above-normal rainfall years. Typical trends for a single season start with little to no vegetative moisture stress in the spring, when the soil is moist and the river is flowing. As the river begins to dry up in the lower Carmel Valley (around June) and temperatures begin to increase, an overall increase in vegetative moisture stress occurs. For much of the riparian corridor this stress has been mitigated by supplemental irrigation, thereby preventing the die off of large areas of riparian habitat. However, many recruiting trees experience high levels of stress or mortality in areas difficult to irrigate. Riparian vegetation exposed to rapid or substantial lowering of groundwater levels (i.e., below the root zones of the plants) will continue to require monitoring and irrigation during the dry season.

With respect to riparian songbird diversity, populations dropped after major floods in 1995 and 1998 because of the loss of streamside habitat. However, they have rebounded in the last few years and have shown some of the highest diversity since monitoring began in 1992, indicating that the District mitigation program is preserving and improving riparian habitat.

Carmel River Lagoon

The District continues to support and encourage the ongoing habitat restoration efforts in the wetlands and riparian areas surrounding the Carmel River Lagoon. These efforts are consistent with goals that were identified in the Carmel River Lagoon Enhancement Plan, which was partially funded by the District. The District continues to work with various agencies and landowners to implement restoration of the Odello West property and the Odello East property across Highway 1. Because of the restoration activities on the south side of the lagoon, the District has concentrated its monitoring efforts on the relatively undisturbed north side. Staff have also attended meetings and had discussions with other agencies regarding the use of an old agricultural well and treated water from the Carmel Area Wastewater District to augment the lagoon during periods of low water.

The District expanded its long-term monitoring around the lagoon in 1995 in an attempt to determine if the reduction in freshwater flows due to groundwater pumping upstream might be changing the size or ecological character of the wetlands. Demonstrable changes have not been identified. Because of the complexity of the estuarine system, a variety of parameters are monitored, including vegetative cover in transects and quadrats, soil and water conductivity, and hydrology. It is notable that due to the number of factors affecting this system, it would be premature to attribute any observed changes solely to groundwater pumping. During this period, for example, there have been two extremely wet years (1995 and 1998), and two above normal years (1996 and 1997), in terms of runoff. Other natural factors that affect the wetlands include introduction of salt water into the system as waves overtop the sandbar in autumn and winter, tidal fluctuations, and long-term global climatic change. When the District initiated the long-term lagoon monitoring component of the Mitigation Program, it was with the understanding that it would be necessary to gather data for an extended period in order to draw conclusions about well

draw-down effects on wetland dynamics. It is recommended that the annual vegetation, soil conductivity, topographical and wildlife monitoring be continued in order to provide a robust data set for continued analysis of potential changes around the lagoon.

Lagoon bathymetric cross sectional surveys, initially conducted in 1988, have been completed annually since 1994 in August or September. These data are useful in assessing changes in the sand supply within the main body of the lagoon. So far, no major trends indicating sand accumulation or depletion have been identified. These data provide answers to questions concerning whether or not the lagoon is filling up with sand, thus losing valuable habitat.

Program Costs

Mitigation Program costs for July 2003 through June 2004 totaled approximately $1.5 million. The annual cost of mitigation efforts varies because several mitigation measures are weather dependent. However, the overall costs have remained fairly constant (about $1.3-$1.7 million) over the past few years. The one exception was Fiscal Year 2000 (July 1999-June 2000) when an additional $981,786 was added to the capital expense program to fund one half of the acquisition cost of the District's new office building, bringing the expenditure total to over $2.6 million that year. This cost is being reimbursed over a period of 15 years.

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Table I-1

SUMMARY OF COMPONENTS OF MPWMD MITIGATION PROGRAM

July 1, 2003 – June 30, 2004

WATER MANAGEMENT

- Monitor Water Resources
- Manage Water Production
- Manage Water Demand
- Monitor Water Usage
- Augment Water Supply
- Allocation of New Supply
- Determine Drought Reserve

STEELHEAD FISHERY

- Capture/Transport Emigrating Smolts in Spring
  - -- Smolt rescues
  - -- Build acclimation facility/tagging study
- Prevent Stranding of Fall/Winter Juvenile Migrants
  - -- Juvenile rescues
  - -- Build mid-Valley holding facility
- Rescue Juveniles Downstream of Robles del Rio in Summer
- Build Sleepy Hollow holding/rearing facility
- Modify Spillway/Transport Smolts Around Los Padres Dam
- Monitoring Activities for Mitigation Plan
  - -- Adult counts at San Clemente Dam

-- Juvenile population surveys

- Other Activities Not required by Mitigation Plan

-- Spawning habitat restoration
-- Fish planting (steelhead broodstock program)
-- Coastal Salmon Recovery Program grant (began mid-2001)
-- Modify critical riffles

RIPARIAN VEGETATION AND WILDLIFE

- Conservation and Water Distribution Management
- Prepare/Oversee Riparian Corridor Management Plan
- Implement Riparian Corridor Management Program

-- Cal-Am well irrigation (4 wells)
-- Channel clearing
-- Vegetation monitoring
-- Track and pursue violations
-- River Care Guide booklet
-- CRMP Erosion Protection Program

LAGOON VEGETATION AND WILDLIFE

- Assist with Lagoon Enhancement Plan Investigations (See Note 1)
- Expand Long-Term Lagoon Monitoring Program

-- Water quality/quantity
-- Vegetation/soils

- Identify Alternatives to Maintain Lagoon Volume

AESTHETICS

- Restore Riparian Vegetation (see above)

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Note 1: Mitigation measures are dependent on implementation of the Lagoon Enhancement Plan by the California Department of Parks and Recreation, the land owner and CEQA lead agency. Portions of the Enhancement Plan are being implemented by Caltrans as part of a "mitigation banking" project.

Table I-2

Summary of Mitigation Program Accomplishments in 2003-2004

MITIGATION ACTION	MAJOR ACCOMPLISHMENTS IN FY 03-04
Monitor Water Resources	Regularly tracked precipitation, streamflow, surface and ground water levels and quality, and lagoon characteristics between Los Padres Dam and the Carmel River Lagoon, using real-time and computer monitoring methods at numerous data collection stations. Maintained extensive monitoring network, continuous streamflow recorder below San Clemente Dam and other sites.
Manage Water Production	Developed and implemented multi-agency Memorandum of Agreement and quarterly water

	supply strategies; worked cooperatively with resource agencies implementing the federal Endangered Species Act. Implemented Ordinance Nos. 96, 105 and 106 regulating water distribution systems.
Manage Water Demand	Inspected 1,793 properties for conservation compliance, which saved an estimated 22 acre-feet (AF) through required retrofits; provided retrofit refunds for 235 toilets, saving an estimated 4.8 AFY; provided water credit incentives for 525 property owners to install ultra-water efficient fixtures; conducted public outreach for conservation program. Explored funding options to expand Pebble Beach reclamation program. Processed 1,271 permits of various types under allocation program; coordinated with jurisdictions to help streamline permit process.
Monitor Water Usage	Complied with SWRCB Order 95-10 for Water Year 2004.
Augment Water Supply	Prepared a Board Review Draft EIR and detailed onshore and offshore hydrogeologic studies on the District's then-proposed 8,400 AFY desalination project in Sand City; evaluated alternatives including Cal-Am's Coastal Water Project (Moss Landing desalination) and Carmel River Dam, among others. Participated on technical committee evaluating options for seismic safety and sediment management at San Clemente Dam. Injected 160 AF into Seaside Basin through May 2004 as part of aquifer storage and recovery project (ASR) testing. Began recovery tests to assess fate and quality of injected water. Continued work to initiate a formal Seaside Basin Groundwater Management Plan.
Allocate New Supply	Remained within overall limits set by Water Allocation Program.
Determine Drought Reserve	Rationing was not required due to adequate storage reserve.
Steelhead Fishery Program	Counted 388 adult fish passing San Clemente Dam; rescued 50,277 young steelhead from drying reaches of the Carmel River in July 2003-June 2004 period; completed extensive retrofit project at Sleepy Hollow steelhead rearing facility to protect pumps and other equipment from significant increase in sediment emanating from San Clemente Dam; stocked 28,327 rescued fish in Facility in Summer 2003 and another 10,875 fish in Spring 2004 with roughly 44% survival; conducted annual spawning nest ("redd")

	and juvenile fish population survey; conducted California Stream Bio-assessment Procedure (benthic invertebrate sampling at 5 stations); coordinated with Cal-Am regarding operations to maximize fish habitat.
Riparian Habitat Program	Continued revegetation at Trail and Saddle Club and Red Rock Project; conducted a detailed assessment of a portion of the Carmel River Watershed under contract with the Carmel River Watershed Conservancy; obtained a federal Regional General Permit for MPWMD river activities through 2009; completed final report on "large wood" habitat in the river; diversified restoration techniques and experimented with planting techniques to allow trees to mature more quickly with less irrigation; inspected private projects for compliance with permit conditions; carried out several enforcement actions to address unlawful construction activities along the river; completed annual river inspection; continued long-term monitoring of physical and biological processes; made several presentations on MPWMD restoration techniques to general interest and scientific groups.
Lagoon Habitat Program	Provided technical expertise and data to multi-agency sponsors of lagoon restoration program; assisted Carmel Area Wastewater District evaluate possible Lagoon augmentation with recycled water; continued vegetation habitat monitoring at eight transect locations; monitored four bathymetric transects; participated in interagency meetings regarding management of lagoon in winter storm events.
Aesthetic Measures	See Riparian Habitat Program measures.